More particularly, it is respectfully submitted that the Office Action has listed an excessive number of species. That is, FIG. 5 is meant for background discussion to aid in an understanding of the invention. FIGs. 6, 9 and 14 illustrate different views of same or similar embodiments, *e.g.*, FIG. 6 shows a cross-sectional view, FIG. 9 shows a perspective view of a rectangular embodiment, and FIG. 14 shows a top view of a rounded-rectangular embodiment. FIGs. 12 and 13 show similar, but multi-part stiffeners. Finally, FIGs. 7 and 15 show side (as opposed to top-surface) stiffeners.

REASONABLE NUMBER OF SPECIES, WITH GENERIC CLAIM

As traversal, 37 CFR §1.141 provides that more than one species of an invention, not to exceed a reasonable number, may be specifically claimed in different claims in one application providing the application also includes an allowable generic claim to all of the claimed species, and all claims to the species in excess of one are written in dependent form or otherwise include the limitations of an allowable generic claim. Since Applicant believes that at least presently-pending claims 1-3, 7-8, 13, 40-42 and 45 are allowable and generic, and that all other pending claims contain the limitations of such generic claims, Applicant respectfully submits that the election of species requirement should be withdrawn and all claims considered and allowed.

NOT INDEPENDENT AND DISTINCT INVENTIONS

As traversal, Applicant notes that 35 USC §121, the basis for a restriction and election of species requirement, provides for a restriction only if two or more

independent and distinct inventions are claimed in one application. While §802.01 of the Manual of Patent Examining Procedure indicates that restriction and/or election of species may be permissible between independent or distinct inventions, such section of the Manual of Patent Examining Procedure is clearly erroneous in view of the plain and unambiguous language of 35 USC §121.

In this connection, the above-noted section of the Manual of Patent Examining Procedure defines the term "independent" as meaning that there is no disclosed relationship between the two or more subjects disclosed; that is, they are unconnected in design, operation or effect. It is respectfully submitted that a contention cannot validly be made that the subject matter recited in the claims at issue relating to the respective embodiments of the present invention have no disclosed relationship, for if such is the case, such contentions are clearly without merit, as a review of the instant specification and the claimed subject matter reveals. More particularly, to show that Applicant's claims are related, Applicant respectfully submits the following comments.

All of Applicant's claims are related to stiffeners or arrangements including stiffeners, the stiffeners providing mechanical stiffening support to either thin-core or coreless substrates.

With further regard to the erroneous restriction/election position presented in the Manual of Patent Examining Procedure (i.e., teaching restriction/election for "independent or distinct inventions" instead of the unambiguous "independent and distinct inventions" statutory language), as pointed out by Mr. McKelvey in the concurring opinion in *ex parte* Hartmann, 186 USPQ 366 (Bd. App. 1974), relying upon the Decision of *ex parte* Schwarze, 151 USPQ 426 (Bd. App. 1966) the Manual

of Patent Examining Procedure merely provides guidelines for Examiners in the US Patent Office and it does not replace, and is subservient to, applicable statutes, Rules of Practice, and prior decisions. Thus, it would appear that, by virtue of the plain and unambiguous language of 35 USC §121, the statute only permits an election of species requirement between two or more independent and distinct inventions (not independent or distinct inventions) in spite of the circumlocutory argumentation of §802.01 of the Manual of Patent Examining Procedure.

Furthermore, in view of the interrelationship of the inventions designated in the Office Action, and in view of the fact that each of the designated inventions are, in essence, based upon the same basic inventive concept, Applicant respectfully submits that the designated inventions are not independent and distinct to the extent required by 35 USC §121 to support a restriction requirement. In this connection, Applicant notes that a basic inventive concept of the claims in issue relates to stiffeners applicable to thin-core and coreless substrates. Applicant respectfully submits that these differences should not be considered as rendering the respective embodiments independent and distinct to the extent required by 35 USC §121.

In summary, a review of the Office Action reveals that the Office Action has failed to clearly indicate how the subject matter recited in the respective groups of claims represents both independent and distinct inventions are required by 35 USC §121.

RELATED INVENTIONS - NO SERIOUS BURDEN FOR EXAMINATION

As traversal, presuming *arguendo* that one could establish that the subject matter recited in the claims in issue relating to the respective embodiments of the

present invention relate to independent and distinct inventions as required by 35 USC §121, as pointed out in §803 of the Manual of Patent Examining Procedure, if a search and an examination of an entire application can be made without serious burden, the Examiner must examine the application on the merits even though the application includes claims to distinct or independent inventions. A review of the Office Action reveals that such Office Action has failed to provide any indication as to how or why a search and examination of an entirety of the claims in the instant application would create a serious burden on the part of the United States Patent and Trademark Office. In fact, it is respectfully submitted that a serious burden cannot be shown at this time owing to the fact that the claims are related as mentioned above.

PROVISIONAL ELECTION

In order to comply with the election of species requirement, Applicant provisionally elects, with traverse, for prosecution on the merits, Species (II) of FIG. 6, including at least claims 1-10, 13-23, 26-36 and 39-51.

NO ADMISSION - RESTRICTION/ELECTION

Applicant submits that the instant response (including the comments submitted and the provisional election) is not an admission on the record that the respective species are separately distinct species and/or obvious variants.

SUPPORT FOR SUBSTITUTE/ADDED CLAIMS

In order to preclude renewal of any previous 35 USC rejections in any prior applications with respect to added (i.e., clarified/refocused) claims 40-51, Applicant respectfully submits the following. More particularly, ones of added claims 40-45 substantially parallel ones of original claims 1-13 but are alternatively worded claims, and similarly, ones of added claims 46-51 substantially parallel ones of original claims 14-26.

Consideration and express written allowance of all of the added claims are respectfully requested.

INDICATION OF CHANGES MADE

In order to comply with requirements under the recent changes to U.S. practice, amendments are made via the attached "Appendix - Version With Markings To Show Changes Made".

EXAMINER INVITED TO TELEPHONE

The Examiner is herein invited to telephone the undersigned attorneys at the local Washington, D.C. area telephone number of 703/312-6600 for discussing any Examiner's Amendments or other suggested actions for accelerating prosecution and moving the present application to allowance.

CONCLUSION

In view of the foregoing amendments and remarks, Applicant respectfully submits that the claims listed above as presently being under consideration in the

application are now in condition for allowance. Accordingly, early allowance of such claims is respectfully requested.

No Petition is required for the filing of this Amendment. A Form PTO-2038 is submitted herewith authorizing payment of the additional claims fees of $384. To whatever other extent is actually necessary, Applicant petitions for an extension of time under 37 CFR §1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including Petition and excess claim fees, to ATS&K Deposit Account No. 01-2135 (referencing case No. 219.40241X00) and please credit any excess fees to such Deposit Account.

Respectfully submitted,

Paul J. Skwierawski
Registration No. 32,173
ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 North Seventeenth Street, Suite 1800
Arlington, VA 22209-3801
Telephone 703-312-6600
Facsimile 703-312-6666

ATTACHMENTS:
Appendix - Version With Markings To Show Changes Made
Form PTO-2038 ($384)

APPENDIX - VERSION WITH MARKINGS TO SHOW CHANGES MADE IN THE CLAIMS:

Please amend the claims as follows. Note that the full text of all claims (including those not being amended within this paper) may also be included to provide the convenience of a complete set of claims for easy review:

1. A stiffener to provide stiffening support to one of a thin-core and coreless substrate of an integrated circuit printed circuit board (IC-PCB) carrier package.

2. A stiffener as claimed in claim 1, the IC-PCB carrier package being one of a flip chip pin grid array (FC-PGA) and a flip chip ball grid array (FC-BGA) carrier package.

3. A stiffener as claimed in claim 1, the stiffener is substantially made of at least one of a metal-like, plastic-like, glass-like and ceramic-like material, is one of a molded, stamped, etched, extruded and deposited stiffener, and is capable of withstanding high temperatures of at least one of an IC die bonding operation and normal IC operation.

4. A stiffener as claimed in claim 1, the stiffener being planar for mounting to a die-side major planar surface of the substrate.

5. A stiffener as claimed in claim 1, the stiffener having an internal window therein to provide clearance for at least one of a die, under-fill, die side components (DSC), and integrated heat spreader (IHS).

6. A stiffener as claimed in claim 1, the stiffener being a multi-part stiffener.

7. A stiffener as claimed in claim 1, the stiffener having an above-substrate-plane height when mounted, which is less-than or equal to an above-substrate-plane height, when mounted, of one of: an IC-die, and a combination of an IC-die with an integrated heat spreader (IHS).

8. A stiffener as claimed in claim 1, the stiffener having a top surface above a substrate-plane when mounted, which is substantially co-planar with, when mounted, a top surface of one of: an IC-die, and a combination of an IC-die with an integrated heat spreader.

9. (Amended) A stiffener as claimed in claim 8, the stiffener being [adapted] <u>disposable</u> to co-support a heat sink, with one of: an IC-die, and a combination of an IC-die with an integrated heat spreader (IHS).

10. A stiffener as claimed in claim 1, where if a main body of the stiffener is electrically conductive, the stiffener further includes an insulator to electrically insulate electrical members on stiffener-opposing areas of the substrate.

11. A stiffener as claimed in claim 1, the stiffener being an edge stiffener for mounting to minor-planar side-surfaces of the substrate.

12. (Amended) A stiffener as claimed in claim 1, the edge stiffener having a non-flat cross section [which is adapted to mate] mate-able with the side-surfaces of the substrate.

13. (Amended) A stiffener as claimed in claim 1, where the edge stiffener is [adapted to be pre-attached] pre-attachable to the substrate by an IC-PCB carrier package manufacturer.

14. A thin-core or coreless integrated circuit printed circuit board (IC-PCB) carrier package comprising: a stiffener to provide stiffening support to one of a thin-core and coreless substrate of the IC-PCB carrier package.

15. An IC-PCB carrier package as claimed in claim 14, the IC-PCB carrier package being one of a flip chip pin grid array (FC-PGA) and a flip chip ball grid array (FC-BGA) carrier package.

16. An IC-PCB carrier package as claimed in claim 14, where the stiffener is substantially made of at least one of a metal-like, plastic-like, glass-like and ceramic-like material, is one of a molded, stamped, etched, extruded and deposited stiffener, and is capable of withstanding high temperatures of at least one of an IC die bonding operation and normal IC operation.

17. An IC-PCB carrier package as claimed in claim 14, the stiffener being planar and mounted to a die-side major planar surface of the substrate.

18. An IC-PCB carrier package as claimed in claim 14, the stiffener having an internal window therein to provide clearance for at least one of a die, under-fill, die side components (DSC), and integrated heat spreader (IHS).

19. An IC-PCB carrier package as claimed in claim 14, the stiffener being a multi-part stiffener.

20. An IC-PCB carrier package as claimed in claim 14, the stiffener having an above-substrate-plane height, which is less-than or equal to an above-substrate-plane height, when mounted, of one of: an IC-die, and a combination of an IC-die with an integrated heat spreader (IHS).

21. An IC-PCB carrier package as claimed in claim 14, the stiffener having a top surface above a substrate-plane, which is substantially co-planar with, when mounted, a top surface of one of: an IC-die, and a combination of an IC-die with an integrated heat spreader.

22. (Amended) An IC-PCB carrier package as claimed in claim 21, the stiffener being [adapted] <u>disposable</u> to co-support a heat sink, with one of: an IC-die, and a combination of an IC-die with an integrated heat spreader (IHS).

23. An IC-PCB carrier package as claimed in claim 14, where if a main body of the stiffener is electrically conductive, the stiffener further includes an insulator to electrically insulate electrical members on stiffener-opposing areas of the substrate.

24. An IC-PCB carrier package as claimed in claim 14, the stiffener being an edge stiffener mounted to minor-planar side-surfaces of the substrate.

25. An IC-PCB carrier package as claimed in claim 14, the edge stiffener having a non-flat cross section which is mated with the side-surfaces of the substrate.

26. An IC-PCB carrier package as claimed in claim 14, where the edge stiffener is pre-attached to the substrate by an IC-PCB carrier package manufacturer.

27. A packaged integrated circuit (IC) comprising:

a thin-core or coreless integrated circuit printed circuit board (IC-PCB) carrier package comprising a stiffener to provide stiffening support to one of a thin-core and coreless substrate of the IC-PCB carrier package.

28. A packaged IC as claimed in claim 27, the IC-PCB carrier package being one of a flip chip pin grid array (FC-PGA) and a flip chip ball grid array (FC-BGA) carrier package.

29. A packaged IC as claimed in claim 27, where the stiffener is substantially made of at least one of a metal-like, plastic-like, glass-like and ceramic-like material, is one of a molded, stamped, etched, extruded and deposited stiffener, and is capable of withstanding high temperatures of at least one of an IC die bonding operation and normal IC operation.

30. A packaged IC as claimed in claim 27, the stiffener being planar and mounted to a die-side major planar surface of the substrate.

31. A packaged IC as claimed in claim 27, the stiffener having an internal window therein to provide clearance for at least one of a die, under-fill, die side components (DSC), and integrated heat spreader (IHS).

32. A packaged IC as claimed in claim 27, the stiffener being a multi-part stiffener.

33. A packaged IC as claimed in claim 27, the stiffener having an above-substrate-plane height, which is less-than or equal to an above-substrate-plane height, when mounted, of one of: an IC-die, and a combination of an IC-die with an integrated heat spreader (IHS).

34. A packaged IC as claimed in claim 27, the stiffener having a top surface above a substrate-plane, which is substantially co-planar with, when mounted, a top

surface of one of: an IC-die, and a combination of an IC-die with an integrated heat spreader.

35. (Amended) A packaged IC as claimed in claim 34, the stiffener being [adapted] disposable to co-support a heat sink, with one of: an IC-die, and a combination of an IC-die with an integrated heat spreader (IHS).

36. A packaged IC as claimed in claim 27, where if a main body of the stiffener is electrically conductive, the stiffener further includes an insulator to electrically insulate electrical members on stiffener-opposing areas of the substrate.

37. A packaged IC as claimed in claim 27, the stiffener being an edge stiffener mounted to minor-planar side-surfaces of the substrate.

38. A packaged IC as claimed in claim 27, the edge stiffener having a non-flat cross section which is mated with the side-surfaces of the substrate.

39. A packaged IC as claimed in claim 27, where the edge stiffener is pre-attached to the substrate by an IC-PCB carrier package manufacturer.

40. (New) A stiffener member disposable onto at least one of a thin-core and coreless substrate of an integrated circuit printed circuit board (IC-PCB) carrier package to provide stiffening support thereto.

41. (New) A stiffener as claimed in claim 40, the IC-PCB carrier package being one of a flip chip pin grid array (FC-PGA) and a flip chip ball grid array (FC-BGA) carrier package.

42. (New) A stiffener as claimed in claim 40, the stiffener is substantially made of at least one of a metal-like, plastic-like, glass-like and ceramic-like material, is one of a molded, stamped, etched, extruded and deposited stiffener, and is capable of withstanding high temperatures of at least one of an IC die bonding operation and normal IC operation.

43. (New) A stiffener as claimed in claim 40, the stiffener being planar for mounting to a die-side major planar surface of the substrate.

44. (New) A stiffener as claimed in claim 40, the stiffener being a multi-part stiffener.

45. (New) A stiffener as claimed in claim 40, the stiffener being disposable to co-support a heat sink, with one of: an IC-die, and a combination of an IC-die with an integrated heat spreader (IHS).

46. (New) A thin-core or coreless integrated circuit printed circuit board (IC-PCB) carrier package comprising: a stiffener secured onto at least one of a thin-core and coreless substrate of the integrated circuit printed circuit board (IC-PCB) carrier package to provide stiffening support thereto.

47. (New) An IC-PCB carrier package as claimed in claim 46, the IC-PCB carrier package being one of a flip chip pin grid array (FC-PGA) and a flip chip ball grid array (FC-BGA) carrier package.

48. (New) An IC-PCB carrier package as claimed in claim 46, the stiffener is substantially made of at least one of a metal-like, plastic-like, glass-like and ceramic-like material, is one of a molded, stamped, etched, extruded and deposited stiffener, and is capable of withstanding high temperatures of at least one of an IC die bonding operation and normal IC operation.

49. (New) An IC-PCB carrier package as claimed in claim 46, the stiffener being planar for mounting to a die-side major planar surface of the substrate.

50. (New) An IC-PCB carrier package as claimed in claim 46, the stiffener being a multi-part stiffener.

51. (New) An IC-PCB carrier package as claimed in claim 46, the stiffener being disposable to co-support a heat sink, with one of: an IC-die, and a combination of an IC-die with an integrated heat spreader (IHS).